2008

Nebraska Summary: S645 Challenger MT535B

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SUMMARY OF OECD TEST 2431–NEBRASKA SUMMARY 645
CHALLENGER MT 535B TECHSTAR DIESEL
CONTINIOUSLY VARIABLE TRANSMISSION
Tractor chassis S/N S082002 and higher

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1081 rpm)					
128.4 *(95.7)*	2200	8.16 *(30.88)*	0.452 *(0.275)*	15.74 *(3.10)*	
Standard Power Take-off Speed(1000 rpm)					
138.2 *(103.1)*	2034	8.05 *(30.47)*	0.415 *(0.252)*	17.17 *(3.38)*	
Maximum Power (1 hour)					
145.9 *(108.8)*	1800	8.10 *(30.64)*	0.395 *(0.240)*	18.02 *(3.55)*	
VARYING POWER AND FUEL CONSUMPTION					
128.4 *(95.7)*	2200	8.16 *(30.88)*	0.452 *(0.275)*	15.74 *(3.10)*	Air temperature
109.2 *(81.5)*	2202	7.31 *(27.68)*	0.477 *(0.290)*	14.94 *(2.94)*	70°F *(21°C)*
82.1 *(61.2)*	2210	6.18 *(23.40)*	0.535 *(0.326)*	13.28 *(2.62)*	Relative humidity
55.0 *(41.0)*	2223	4.65 *(17.59)*	0.602 *(0.366)*	11.83 *(2.33)*	51%
27.8 *(20.7)*	2237	3.12 *(11.80)*	0.799 *(0.486)*	8.91 *(1.76)*	Barometer
-- --	2245	1.90 *(7.19)*	-- --	-- --	29.9" Hg *(101.1 kPa)*

Maximum Torque - 457.9 lb.-ft. *(620.9 Nm)* at 1399 rpm
Maximum Torque Rise - 49.2%
Torque rise at 1750 engine rpm - 43%

DRAWBAR PERFORMANCE
(Unballasted - Front Drive Engaged)
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—Turtle 8									
107.3 *(80.0)*	8160 *(36.3)*	4.93 *(7.94)*	2191	5	0.542 *(0.330)*	13.16 *(2.59)*	183 *(84)*	45 *(7)*	29.3 *(99.1)*
75% of Pull at Maximum Power—Turtle 8									
81.9 *(61.1)*	6105 *(27.2)*	5.03 *(8.10)*	2193	4	0.595 *(0.362)*	11.97 *(2.36)*	180 *(82)*	45 *(7)*	29.3 *(99.1)*
50% of Pull at Maximum Power—Turtle 8									
56.1 *(41.8)*	4090 *(18.2)*	5.14 *(8.27)*	2209	2	0.676 *(0.411)*	10.54 *(2.08)*	181 *(83)*	45 *(7)*	29.3 *(99.1)*
75% of Pull at Reduced Engine Speed—Turtle 9									
82.9 *(61.8)*	6150 *(27.4)*	5.05 *(8.13)*	2012	4	0.541 *(0.329)*	13.15 *(2.59)*	181 *(83)*	45 *(7)*	29.3 *(99.1)*
50% of Pull at Reduced Engine Speed—Turtle 9									
55.7 *(41.5)*	4070 *(18.1)*	5.13 *(8.26)*	2003	2	0.607 *(0.369)*	11.73 *(2.31)*	180 *(82)*	45 *(7)*	29.3 *(99.1)*

Location of tests: Groupement d'Antony, Parc de Touvoie, BP 44 Antony, France 92163

Dates of tests: March - May, 2008

Manufacturer: AGCO S.A. BP 307, Avenue Blaise Pascal, 60026 Beauvais, France

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.855 **Fuel weight** 7.11 lbs/gal *(0.853 kg/l)* **Oil SAE** 15W40 **API service classification** CH4 **Transmission and hydraulic lubricant** BP Terrac Tractan 9 10W/40 **Front axle lubricant** SAE 85W140 API GL-5

ENGINE: Make Perkins Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** U004188P **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.134" x 5.000" *(105.0 mm x 127.0 mm)* **Compression ratio** 16.2 to 1 **Displacement** 402 cu in *(6596 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: Type front wheel assist **Serial No.** S171018 **Tread width** rear 61.7" *(1566 mm)* to 74.6" *(1896 mm)* front 63.4" *(1610 mm)* to 78.1" *(1984 mm)* **Wheelbase** 109.4" (*2780 mm)* **Hydraulic control system** direct engine drive **Transmission** CVT. A combination of mechanical and hydrostatic sections allow an infinite speed adjustment within the ranges noted. The transmission has two mechanical ranges. **Nominal travel speeds mph *(km/h)*** forward: Low range 0-18 *(0-29)*, high range 0-25 *(0-40)* reverse: Low range 0-18 *(0-29)*, high range 0-25*(0-40)* **Clutch** a foot pedal controls the hydrostatic oil flow **Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2062 engine rpm or 1000 rpm at 2034 engine rpm **Unladen tractor mass** 14780 lb *(6705 kg)*

DRAWBAR PERFORMANCE

(Unballasted - Front Drive Engaged)
MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					Turtle 5				
91.2 *(68.0)*	13060 *(58.1)*	2.62 *(4.22)*	2197	15	0.604 *(0.368)*	11.78 *(2.32)*	174 *(79)*	45 *(7)*	29.3 *(99.1)*
					Turtle 6				
105.7 *(78.8)*	12950 *(57.6)*	3.06 *(4.92)*	2131	14	0.533 *(0.324)*	13.35 *(2.63)*	174 *(79)*	45 *(7)*	29.3 *(99.1)*
					Turtle 7				
113.6 *(84.7)*	12545 *(55.8)*	3.39 *(5.46)*	1864	11	0.508 *(0.309)*	14.01 *(2.76)*	176 *(80)*	45 *(7)*	29.3 *(99.1)*
					Turtle 8				
117.6 *(87.7)*	11130 *(49.5)*	3.96 *(6.38)*	1840	10	0.494 *(0.301)*	14.41 *(2.84)*	176 *(80)*	45 *(7)*	29.3 *(99.1)*
					Turtle 9				
118.9 *(88.7)*	10230 *(45.5)*	4.36 *(7.02)*	1811	8	0.483 *(0.294)*	14.72 *(2.90)*	180 *(82)*	45 *(7)*	29.3 *(99.1)*
					Turtle 10				
120.3 *(89.7)*	9035 *(40.2)*	4.99 *(8.03)*	1813	7	0.459 *(0.279)*	15.49 *(3.05)*	180 *(82)*	45 *(7)*	29.3 *(99.1)*
					Turtle 11				
119.9 *(89.4)*	7620 *(33.9)*	5.90 *(9.49)*	1801	6	0.478 *(0.291)*	14.87 *(2.93)*	181 *(83)*	45 *(7)*	29.3 *(99.1)*
					Rabbit 9				
112.6 *(84.0)*	9645 *(42.9)*	4.38 *(7.05)*	1925	8	0.512 *(0.311)*	13.90 *(2.74)*	176 *(80)*	46 *(8)*	29.3 *(99.1)*
					Rabbit 12				
120.3 *(89.7)*	7870 *(35.0)*	5.73 *(9.22)*	1796	7	0.464 *(0.282)*	15.33 *(3.02)*	180 *(82)*	46 *(8)*	29.3 *(99.1)*
					Rabbit 14				
120.7 *(90.0)*	6700 *(29.8)*	6.76 *(10.88)*	1803	6	0.480 *(0.292)*	14.82 *(2.92)*	181 *(83)*	46 *(8)*	29.3 *(99.1)*
					Rabbit 16				
119.9 *(89.4)*	5415 *(24.1)*	8.30 *(13.36)*	1807	4	0.482 *(0.293)*	14.77 *(2.91)*	181 *(83)*	46 *(8)*	29.3 *(99.1)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: The performance figures on this report apply to tractors with chassis S/N S82002 and higher.

NOTE 2: The data on this summary was obtained from OECD report 2431 conducted on the Massey Ferguson 7475 Diesel.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. The manufacturer's three point lift claim of 10915 lbs *(4950 kg)* with category III hitch was not verified. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **2431,** Nebraska Summary 645, January 14, 2010.

Roger M. Hoy
Director

M.F. Kocher
V.I. Adamchuk
J.A. Smith
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	**dB(A)**
At no load in Turtle 7	69.0
Bystander	---

TIRES, BALLAST AND WEIGHT	**With Ballast**	**Without Ballast**
Rear tires - No.,size, ply & psi*(kPa)*	Four 480/80R42; **;15*(100)*	Two 480/80R42;**;15*(100)*
Ballast - Duals(total)	1390 lb *(630 kg)*	None
- Cast iron(total)	1145 lb *(520 kg)*	None
Front tires - No.,size, ply & psi*(kPa)*	Two 16.9R28;**;15 *(100)*	Two 16.9R28;**;15*(100)*
Ballast - Liquid(total)	None	None
- Cast Iron(total)	860 lb *(390 kg)*	None
Height of Drawbar	18.5 in *(470 mm)*	18.5 in *(470 mm)*
Static Weight with operator- Rear	11685 lb *(5300 kg)*	9090 lb *(4260 kg)*
- Front	6655 lb*(3020 kg)*	5555 lb *(2520 kg)*
- Total	18340 lb*(8320 kg)*	14945 lb *(6780 kg)*

DRAWBAR PERFORMANCE

(Ballasted - Front Drive Engaged)
MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					Turtle 4				
97.9	16230	2.26	2172	15	0.594	11.98	172	45	29.3
(73.0)	*(72.2)*	*(3.64)*			*(0.361)*	*(2.36)*	*(78)*	*(7)*	*(99.1)*
					Turtle 5				
105.1	14895	2.65	2134	11	0.552	12.89	174	45	29.3
(78.4)	*(66.3)*	*(4.26)*			*(0.336)*	*(2.54)*	*(79)*	*(7)*	*(99.1)*
					Turtle 6				
111.3	14165	2.95	1963	10	0.519	13.71	176	45	29.3
(83.0)	*(63.0)*	*(4.75)*			*(0.316)*	*(2.70)*	*(80)*	*(7)*	*(99.1)*
					Turtle 7				
116.9	13030	3.37	1815	8	0.494	14.42	176	45	29.3
(87.2)	*(58.0)*	*(5.42)*			*(0.300)*	*(2.84)*	*(80)*	*(7)*	*(99.1)*
					Turtle 8				
119.2	11040	4.05	1825	7	0.483	14.72	180	46	29.3
(88.9)	*(49.1)*	*(6.52)*			*(0.294)*	*(2.90)*	*(82)*	*(8)*	*(99.1)*
					Turtle 9				
119.8	10070	4.46	1804	6	0.470	15.13	180	46	29.3
(89.3)	*(44.8)*	*(7.18)*			*(0.286)*	*(2.98)*	*(82)*	*(8)*	*(99.1)*
					Turtle 10				
119.9	8905	5.05	1809	6	0.480	14.82	180	46	29.3
(89.4)	*(39.6)*	*(8.12)*			*(0.292)*	*(2.92)*	*(82)*	*(8)*	*(99.1)*
					Turtle 11				
119.6	7420	6.05	1799	6	0.483	14.92	183	46	29.3
(89.2)	*(33.0)*	*(9.73)*			*(0.294)*	*(2.90)*	*(84)*	*(8)*	*(99.1)*
					Rabbit 9				
111.3	9225	4.52	1935	10	0.521	13.65	185	46	29.3
(83.0)	*(41.0)*	*(7.28)*			*(0.317)*	*(2.69)*	*(85)*	*(8)*	*(99.1)*
					Rabbit 12				
119.6	7755	5.78	1803	7	0.485	14.67	180	46	29.3
(89.2)	*(34.5)*	*(9.31)*			*(0.295)*	*(2.89)*	*(82)*	*(8)*	*(99.1)*
					Rabbit 14				
119.9	6570	6.84	1810	6	0.480	14.82	176	46	29.3
(89.4)	*(29.2)*	*(11.01)*			*(0.292)*	*(2.92)*	*(80)*	*(8)*	*(99.1)*
					Rabbit 16				
119.8	5395	8.32	1805	3	0.483	14.72	180	46	29.2
(89.3)	*(24.0)*	*(13.39)*			*(0.294)*	*(2.90)*	*(82)*	*(8)*	*(99.0)*

HYDRAULIC PERFORMANCE

CATEGORY: II	
Quick Attach: None	
OECD Static test	
Maximum force exerted through whole range:	12630 lbs *(56.2 kN)*
i) Opening pressure of relief valve:	NA
Sustained pressure of the open relief valve:	2900 psi *(200 bar)*
ii) Pump delivery rate at minimum pressure:	30.2 GPM *(114.2 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	25.9 GPM *(98.2 l/min)*
Delivery pressure:	2395 psi *(165 bar)*
Power:	36.2 HP *(27.0 kW)*

THREE POINT HITCH PERFORMANCE - SAE Test

Observed Maximum Pressure psi. *(bar)*	2900 *(200)*
Location:	lift cylinder
Hydraulic oil temperature: °F *(°C)*	158 *(70)*
Location:	hydraulic sump
Category:	II
Quick attach:	None

System pressure 2610 psi *(180 bar)*

Hitch point distance to ground level in. *(mm)*	12.0 *(280)*	17.7 *(419)*	23.6 *(560)*	27.6 *(679)*	33.5 *(825)*	38.3 *(964)*
Lift force on frame lb	14300	14815	15175	15510	15445	14410
" " " " " " *(kN)*	*(63.6)*	*(65.9)*	*(67.5)*	*(69.0)*	*(68.7)*	*(64.1)*

HITCH DIMENSIONS AS TESTED - NO LOAD

	SAE TEST		OECD TEST	
	inch	*mm*	inch	*mm*
A	30.5	*775*	30.0	*763*
B	13.4	*340*	13.4	*340*
C	13.9	*354*	13.9	*354*
D	11.9	*303*	11.9	*303*
E	12.9	*328*	10.9	*276*
F	10.3	*261*	10.3	*261*
G	34.5	*875*	34.5	*875*
H	2.4	*60*	2.4	*60*
I	13.7	*348*	14.4	*367*
J	24.2	*614*	24.2	*614*
K	26.2	*665*	26.2	*665*
L	45.9	*1166*	45.9	*1166*
M	26.4	*670*	26.4	*670*
N	40.2	*1021*	40.2	*1021*
O	10.8	*274*	8.4	*214*
P	43.2	*1097*	48.2	*1224*
Q	37.1	*942*	37.8	*959*
R	28.7	*729*	30.5	*775*